CLAIMS:

1. A pneumatic cylinder, comprising:

a shaft member having a piston and a piston rod connected to each other in an axial direction;

a cylinder body the piston rod supporting the shaft member so as to freely reciprocate linearly while the piston rod is protruding to the outside thereof; and

porous air bearings which are incorporated into the cylinder body and slidably support the shaft member,

wherein materials having the approximately equivalent thermal expansion coefficient are used for the shaft member, the cylinder body and the air bearings respectively, and gaps between the shaft member and the air bearings are held constant regardless of temperature change.

2. The pneumatic cylinder according to claim 1, wherein titanium is used as the materials of the shaft member and the cylinder body, and carbon is used as the material of the air bearings.

3. The pneumatic cylinder according to claim 1, wherein titanium is used as the materials of the shaft member and the cylinder body, and ceramic is used as the material of the air bearings.

4. The pneumatic cylinder according to claim 1, wherein copper or copper alloy is used as the materials of the shaft member and the cylinder body, and a sintered material of copper or copper alloy is used as the material of the air bearings.